DOCUMENT RESUME

ED 113 050 PS 008 118

AUTHOR Grimm, Hannelore
TITLE Language Development: Research Program and Some Selected Empirical Findings.
PUB DATE Apr 75
NOTE 17p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Denver, Colorado, April 10-13, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 Plus Postage
DESCRIPTORS Cluster Grouping; *Communication Skills; Comprehension Development; Elementary School Students; Emotional Development; Empathy; *Language Development; Logical Thinking; Persuasive Discourse; Preschool Children; *Psycholinguistics; *Research Methodology; *Semantics; Syntax
IDENTIFIERS *West Germany

ABSTRACT

This paper describes a series of experiments and research paradigms designed to investigate language development, specifically semantic, syntactic, and communicative development in children. Included are discussions of two studies of semantic development which examined developmental changes of word meanings. Also discussed are three studies of communicative development which investigated how explicit or inferred alternatives affect the way preschoolers, first and second graders construct messages in communication situations. In addition, a study which examined children's ability to construct persuasive messages, and a study which investigated the development of empathy in children are described. (BRT)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED113050

Language Development: Research program and some selected empirical findings.*

Hannelore Grimm

University of Heidelberg, Germany

Interest in developmental psycholinguistics in Germany has increased during the past few years. Several empirical research programs have been started; e.g. at the Universities of Marburg and Berlin. Most of these research projects are still in progress. Therefore, I shall restrict myself to reporting some of our own research at Heidelberg which concentrates on three main problems: one, syntactic development in children, two, semantic development in children, and three, communicative development in children.

With regard to the description of developmental sequences of different grammatical structures in children, here the question is in which way specific semantic factors influence the comprehension of syntactic structures.

I would not like to go into details here for to report on studies on the acquisition of grammar would really be like carrying coals to Newcastle.

On the basis of the results of these as well as of the following studies we are currently constructing a test of language development. The construction of a new test we find important because the only

PS008118

*Paper presented at the Biennial Meeting of the Society for Research in Child Development, Denver, Colorado, April 10-13, 1975

comprehensive test existing in Germany is the recently adapted ITPA which is already over twenty years old.

The second main problem area concerns semantic development in children. Here our main concern was to analyze developmental changes of word mearings. The purpose was to show in what way the acquired range of meaning influences the production and the comprehension of semantically consistent and inconsistent sentences. In this research on semantic development, we carried out a total of eight seperate experiments with approximately 300 preschoolers, first, sixth graders, and undergraduates. For the purpose of illustration, I shall restrict myself to a brief description of two of these eight studies.

One experiment was aimed at the changes in the ability to form infralogical and logical relations by means of a grouping task. We presented to the subjects - preschoolers, first and sixth graders - word groups consisting of three nouns each. The three nouns forming a given word group belong to a common semantic field. Each of the nouns is a member of a class-inclusion hierarchy or of a part-whole hierarchy. The task for the children was to find a fourth word which fitted best. The assumption of the task was, that the ability of the children to find a fitting fourth word depends on the recognizing the existing semantic relation between the three words of a word group. One of the research questions was whether recognition of semantic structure is facilitated if the word group explicitly contains a superordinate.

Some of the key results are the following:
With regard to the formation of logical similarity relations, only 5% of the responses of the three to four year-olds can be attributed

to the formation of logical similarity relations. However, 50% of the responses of five to six year-olds and 100% of the responses of sixth graders are related to logical relations. Almost 80% of the responses of the 3 to 4 year-olds were not interpretable. Generally, the preschoolers displayed mainly two types of interpretable responses: A first class of responses where the subjects, mostly 4 to 5 year-olds, abandon the semantic field. for example, they either respond to the item: flower, carnation, rose with garden or earth, or they complete the item: lion, tiger, donkey with circus or forest. Thus placing the given words in a concrete context. A second class of responses, primarily by 5 to 6 year-olds, consisted of responses which enlarge the semantic field. When children, for example, complete the item: lion, tiger, donkey with snake or bird or the item: head, chin, nose with foot or stomach, they only fail to consider specific semantic markers. Since these markers can be qualitatively defined, this test also seems to be suitable for establishing what semantic markers are acquired before others.

- The second major finding of this study was, that it is easier for preschoolers and first graders to complete word groups of the part-whole-type. Groups containing one superordinate and two similars lead significantly more often to the formation of logical relations than groups containing three similars.
  However, this finding does not hold for relations of inclusion; here the mentioning of the superordinate has a negative effect.
- The third major finding was, that the scope of the given semantic field has the greatest effect upon the formation of logical relations. The larger the potential class of response words which

contrast minimally with the item words the easier it is to find appropriate responses.

- The fourth finding was, that when children introduce logical relations in their response pattern, the most frequent ones are coordinates and subordinates. In such item groups in which possible alternatives are very limited, only the oldest children sometimes mention a superordinate (for example, the item group: horse, foal, stallion leads to the response animal).
- The last finding can be interpreted as suggesting that children operate on the basis of the largest possible number of common markers. They form associative links by changing and adding rather than by deleting specific semantic markers.

The second experiment on semantic development was aimed at verifying the hypothesis that asemantic syntagmatic responses in a free association experiment result from incompletely acquired semantic rules and not from the application of different grammatical rules. We had children form sentences with their own S-R-combinations. Children should form syntactically simple sentences in exactly the same way as we do with adult combinations, if the following assumptions prove to be correct: one, that children use the same syntactic rules as adults, meaning that their S-R pairs form single sentence-constituents; two, the S-R combinations children form are semantically compatible for them.

39 preschoolers and first graders as well as 40 sixth graders participated in the experiment. 18 semantically consistent and asemantic word combinations consisting of 6 noun-adjective pairs, noun-verb pairs and verb-adjective pairs were selected from the

data of a free association experiment. The reaction time from the presentation of an item to the production of a sentence was assessed. The sentences were then analyzed in terms of different syntactic and semantic characteristics. According to our hypothesis we obtained the following results:

- Small children have similar reaction times for all items whereas sixth graders need considerably more time for asemantic combinations than for semantically adequate ones.
- Small children form sentences with simple structures for all S-R pairs up to 80%. Sixth graders form simple-structured sentences up to 40% where asemantic combinations occur. But this holds only when no serious semantic restrictions have been broken. Thus they may say: I perspire in the sand or I weep tears failing to add a further specification by which these sentences would become semantically adequate like I perspire in the hot sand or I weep hot tears; but they do not form such simple sentences from the pairs beat-wet and wall-good like the smaller children do: he beats wet or the wall is good.

Let's move now from our research on semantic development to the third area of study, our research on communicative development. Our research on communicative development was stimulated by Olson's theory of reference. We are investigating how some explicit or inferred alternatives affect the way preschoolers, first and second graders construct messages in communication situations.
To date, three studies on messages were conducted of which I would like to describe the designs only:

In the first study, the material we used consisted of two subclasses of animals (dogs versus cats) pictorially presented which further vary systematically on the dimensions of color and size. The children were asked to specify a target item (for example a large white dog) in different contexts of alternatives involving animals of different combinations of color and size such that the recipient of the message would be able to identify it. In the instruction they were told that the objects they had to specify had different names and that they should always select the shortest.

At the end of this experiment, the children were given the same items again and this time, they were asked to make non-redundant decisions. In order to achieve this, we gave the children the same number of coins for each item as markers required for the correct answer. These coins had to be placed into a cardboard box containing different response openings.

A second experiment was performed as a learning experiment with comparable samples. The most important questions which we examined with both experiments are the following:

- What degree of saliency do the three stimulus dimensions have?
- What marker combinations are formed by the children in their message responses? What is the relationship between the degree of redundancy and the required number of markers?
- What effects do different forms of feedback have on the performance of discrimination?
- What differential effects do modes of feedback have in children of different ages and in children with different levels of performance in a non verbal and in a verbal test?

The third experiment deals with the question of the influence of inferred rather than explicit alternatives on communication behavior. This objective was accomplished by establishing changing role relationships between a target person and different communication partners who vary on the dimensions of status and familiarity. This design aimed at examining role-taking behavior in message situations corresponds to a real-life situation and is therefore quite complex. We have not yet succeeded in finding a simpler design in which the only criterion for a correct response is the possibility for unequivocal identification of the target item by the communication partner. In our yet rather complex design, the subject is first introduced to two boys in a picture who differ in physical appearance by their hair color only. Otherwise, they are both called Peter but have a different surname and live in different houses not shown, one in an apartment building and the other in a bungalow. In the second part of the experiment, there appear two girls who look exactly alike (including their hair color) but who also differ by their surnames and by the houses in which they live. An additional deep marker is their difference in age. These boys and girls experience various adventures in picture stories in which one of them always plays a distinct and particular role. The subject's task now is to explain, to different communication partners with specific relations to the actor, which of the two boys or girls played the distinct role.

In order to construct the appropriate message to the communication partner, the subject must first recognize the nature of the role relationship between the target person and the communication partner.

Then, the subject is able to infer what the communication partner must know in order to identify the target person unequivocally. To this end, the designation of the target person by the child must be different depending on whether the communication partner is a family member of the target person, a friend, a peer, or a stranger. This experimental arrangement permits the a priori identification of correct message responses. In addition, different correct responses are of different theoretical status. For this reason alone, it seems to me, this experimental design is an important complement to Olson's paradigmatic cases.

Our research on communicative behavior addresses an additional issue. Up to now, successful communication was defined as the function of the ability to convey minimal required information. Now, we are interested in the children's ability to code message intentions in such a manner that they have a persuasive effect on a communication partner.

Before, we were concerned with the referential act, now we are concerned with the illocutionary acts of asking for something, commanding, forbidding, promising, and permitting. For the purpose of examining message coding ability in children, we chose the following design:

The child is sitting at a table with the experimenter and a big doll "Felix". The child is told short stories which are supposed to make him ask or promise "Felix" something etc.... The doll "Felix" reacts in a standardized manner with refusal, i.e., negative feedback, so that the child is forced to react to this. All items contain altogether three negative feedback loops, the first positive one

being the fourth, so that four responses must be made for each item.

This experiment was carried out with the same children as the above-mentioned experiment on message coding. Therefore, it will be possible to compare the results. The computation is very tedious and difficult since we also include non-verbal behavior in our analysis. Until now many single comparisons have been made. Our main concern, however, is to find typical configurations which represent different behavior within and between illocutionary acts. To date, the most significant differences in illocutionary acts among the age groups are as follows:

- It is relatively easy for all children to ask for something, to command, and to forbid. Children have greater difficulties in permitting and promising. This is particularly true for pre-schoolers.
- Asking for something, commanding, and forbidding, is more or less the same for preschoolers: the imperative mode dominates, the modal verbs must and should are used, the utterances are short and often eliptical, the most frequent modifications are but and yet. When a child starts a request with a polite question it usually already turns into a command after the first feedback loop.

The case is completely different for the seven year-olds who do have a more differentiated communicative pattern. Their utterances vary rather systematically with the different illocutionary acts: this is obvious on the one hand by the usage of the modal verbs: to ask for something goes with to like and to want; to command goes with must or should and to forbid goes with to be able to and

to be allowed to with negation.

There are also differences with regard to the sentence types: (requests allow for statements as well as questions and imperative sentences; in commands, the imperative naturally dominates whenever forbidding statements are used.)

Especially two things make it clear that school children are altogether politer and prefer to use "milder" forms:

First, older children address "Felix" much more frequently by name and use the small word please, a word which seems to be unknown to preschoolers at least in this situation. Secondly, they employ significantly more indirect speech acts; instead of saying: Let me also ... they say: I should also like ...

Or they forbid "Felix" to rock in the following way: I should not like you to rock. Preschoolers however prefer the simple request: You must not rock.

-There is a third finding in communicative pattern differences with age. If we consider the effects of successive feedback we may generally make the following statements: Small children may, if at all, reinforce the strategy they pursued at first, but they do not change it basically. The initial strategy is intensified by the addition of modifications, elliptical abbreviations, and an intensification of volume as well as of gesticulation.

Sometimes, the utterances also receive supplements which however in most cases are threats of negative consequences. Also, seven year-olds show the tendency to modify their first utterance in response to negative feedback only.

At the same time, there are also already many cases in which the children react with completely new speech acts. They use arguments which they partly pick up from the story they were told, but which they also partly make up. When children forbid and command, they may also threaten with negative consequences but at the same time they try to persuade their communication partner by promising him rewards.

It seems that these three forms of persuasion: threat of negative consequences, promise of rewards, and the conveyance of insight by establishing antecedent-consequent relations, are important indicators for the development of the role-taking ability.

-The items of permission and of promising were specially difficult for all the children: for both groups, 40% of the utterances of permission were inadequate; 50% of the responses of promise were wrong for preschoolers and 20% for school children. These response patterns on permission and promising clearly show that the conditions for these illocutions were not understood. The groups differ however in that many of the older children became aware of their mistake after the first feedback and changed their strategy after first usually having asked an egocentric question.

-Finally, we examined regarding these feedback outcomes, in which way modifications on the verbal channel are accompanied by modifications on non-verbal channels. Although our data are rather rough, since we could not use videotapes and we are thus limited to observation records, two points seem to be certain: first all children react to negative feedback most of all by raising their voices.

However, the seven year-olds make use of voice intonation more selectively than the younger children by especially stressing modifications and verbs in utterances. Second, among the older children we find more frequently nonverbal gestures supporting an intentional posture. Older children underline their utterances more precisely whereas preschoolers prefer to seek physical contact.

A final research question regarding communicative patterns concerns the development of empathy which is the primary process underlying interaction and communication. To date there exist only a few studies with partly contradictory results and lacking a cogent theoretical integration. Until now, we were principally concerned with the following two questions: first, in what way do children differentiate and describe emotional meanings of facial expressions? What differences are there among preschoolers, school children and adults?

What is the relationship between the ability of small children to differentiate and their spontaneous usage of emotional adjectives? Second, how do the judgments of preschoolers differ from the judgments of school children and adults with regard to inconsistent informations on the verbal and facial channel? In order to answer these questions we have only succeeded in developing a very simple design:
22 pictures showing men's and women's faces were given to 4 Ss per group (the pictures were taken from Hendricks, M., Guilford, J.P. & Hoepfner, P., Measuring creative social intelligence. Reports from the Psychological Laboratory, University of Southern California, 1969). These pictures were supposed to be grouped according to

similarity. Preschoolers were given the opportunity to practise this sorting task. Next, the Ss were asked to explain their cluster formations. In addition, the older Ss had to describe every picture in terms of emotional adjectives.

Two clustering methods, the connectedness and the diameter method according to Johnson were applied to the mean proximity matrices. Two clearly separate clusters were found for preschoolers. The negative cluster contains such facial expressions described by the other Ss as furious, sceptical, refusing, mean, unsure etc. The positive cluster contains, among others, faces described as being ironical, arrogant, cheerful and nice.

This dichotomization is also reflected in the descriptions. The children use the adjectives mean and kind most frequently. They may also say that the persons are pleased, angry or gay, but lastly these differences are again reduced to the equation gay, friendly = kind; angry = mean.

There is some difference with the emotion of sadness. Sad is mentioned almost as often as mean and the face judged as being sad joins the negative cluster on a very low level.

This indicates that the children were specially unsure in their judgments. As a result we expected the older children to show a further differentation which was confirmed. The further differentation in five significant clusters among the undergraduates may indicate the direction of the growing sensitivity to emotional meaning.

The small children's dichotomization in 2 clusters is also reflected in their spontaneous speech. 5 to 6 year-olds almost

exclusively use the adjectives kind and mean to describe persons' feelings, a thing they seldom do anyway. Thus, they say for example: He is crying, he is mean. We clearly see this tendency to over-generalize in an opposition test too; just as complex dimensional adjectives are substituted by simpler ones (for example, the children respond to broad with small or thin and not with narrow) so they also substitute the adjectives beautiful-ugly or cheerful-sad by the simpler ones good-bad and kind-mean.

We had other groups judge eight inconsistent combinations of facial expression and verbal utterance. The Ss were supposed to imagine that the pictured person A is communicating with person B. After having classified these combinations on a seven-point scale the older subjects selected the most suitable term out of nine emotional adjectives. The preschoolers were individually tested. Their classifications were made on a color scale.

Three analyses of variance were performed with the following results: one analysis of variance on all combinations and one with positive and negative facial expressions do not show significant age effects but show significant effects of the combinations as well as significant interactive effects. If the combinations are summed up according to their degree of inconsistency, then the result is not only a significant age effect but also a significant effect of the groups weak, medium and strong inconsistency and a significant interaction of both factors.

The question whether one source dominates the other or whether some new more complex inference is drawn which could not be made

from either source alone can be positively answered for school children and undergraduates. In contrast, preschoolers mostly reduce the incongruity to one channel. School children and undergraduates judge the inconsistent combination "facial expression very friendly - verbal information very unfriendly" being positive and classify it as joking.

Preschoolers on the contrary solve this discrepancy by clearly tending to the negative sentence. In the opposite case, when the picture shows a negative emotion while the verbal information is positive, a combination the older Ss judged as being sarcastic, we find a clear responder-typification among the preschoolers: 11 out of 30 Ss rate the combination as being as negative as the picture, the others as positive as the verbal message.

School children and undergraduates tend to classify such combinations with a friendly facial expression as more positive than the ones with friendly speech, this being independent of the encoder's sex.

On the other hand, it holds for preschoolers that their classifications are highly dependent on the encoder's sex: for feminine encoders they reduce the inconcistency in every case to the verbal source. For masculine persons the facial expression serves as a judgment criterion where medium and weak inconsistent combinations are concerned.

I am aware that this brief and partial summary of our research program at the University of Heidelberg is not complete enough to allow you to ask specific questions. However, I do hope that

this sketch gave you enough of an impression to whet the appetite for potential cooperation or interest.

Our research program on language development has a multitude of aspects and questions to it. In general, however, the focus is on (1) a developmental approach, and (2) a concern with naturalistic communicative, interactive patterns.